

CLAIM AMENDMENTS:

This listing of claims will replace all prior versions, and listings of claims in the applications:

Listing of Claims:

1. (Cancelled)
2. (Currently amended) An optical fibre comprising:
a first fibre core, the core being doped and having at least one ~~fibre laser~~ lasing volume, the at least one ~~laser~~ lasing volume comprising a pair of reflection gratings embedded in the first fibre core ~~to form a lasing volume~~
and a second undoped fibre core separated from the first fibre core by cladding material of the optical fibre wherein the second fibre core is selectively optically coupled to each of the at least one lasing volumes ~~of each of the at least one fibre laser~~ in the first fibre core such that in use pump light from a pump source can propagate down the second fibre core and be selectively coupled into the at least one ~~fibre laser~~ lasing volume.
3. (Currently amended) An optical fibre as claimed in claim 2 wherein each of the at least one laser lasing volume is enclosed by an additional pair of reflection gratings arranged in use to reflect pump light propagating from the lasing volume of each of the at least one fibre laser lasing volume in the first fibre core.
4. (Cancelled)
5. (Currently amended) An optical fibre as claimed in claim 2 wherein
 - a) the first fibre core contains a plurality of fibre ~~lasers~~ lasing volumes spaced in series along the length of the core and
 - b) additional pairs of reflection gratings are located between some or all of the plurality of fibre lasers, and

- c) the second fibre core is additionally optically coupled to the regions bounded by each of the additional pairs of reflection gratings.
- 6. (Currently amended) An optical fibre as claimed in claim 5 wherein a first set of long period gratings optically couples the second fibre core to ~~the~~ each lasing volume of ~~each~~ fibre laser and a second set of long period gratings optically couples the second fibre core to the regions bounded by the additional reflection gratings, the first and second sets of long period gratings being arranged in use to couple different wavelengths of light.
- 7. (Currently amended) An optical fibre as claimed in claim 2 wherein
 - a) the first fibre core contains a plurality of fibre ~~lasers~~ lasing volumes spaced in series along the length of the core and
 - b) each laser is enclosed by a pair of reflection gratings arranged in use to reflect pump light propagating from ~~the~~ each lasing volume of ~~each~~ fibre laser back into the lasing volume, and
 - c) additional pairs of reflection gratings are located between some or all of the enclosed fibre ~~lasers~~ lasing volumes and
 - d) the second fibre core is additionally optically coupled to the regions bounded by each of the additional pairs of reflection gratings.
- 8. (Currently amended) An optical fibre as claimed in claims 7 wherein a first set of long period gratings optically couples the second fibre core to ~~the~~ each lasing volume of ~~each~~ fibre laser and a second set of long period gratings optically couples the second fibre core to the regions bounded by the additional reflection gratings, the first and second sets of long period gratings being arranged in use to couple different wavelengths of light.
- 9. (Previously Amended) An optical fibre as claimed in claim 2 wherein the optical fibre is tapered along its length.
- 10 - 12. (Cancelled).

13. (Previously presented) An optical fibre as claimed in claim 2 wherein the second fibre is optically coupled to the first fibre by one or more long period gratings.
14. (Previously presented) An optical fibre as claimed in claim 3 wherein the second fibre is optically coupled to the first fibre by one or more long period gratings.
15. (Previously presented) An optical fibre as claimed in claim 2 wherein the optical fibre comprises a further third fibre core, the third fibre core being optically coupled to the at least one laser of the first fibre core and separated from the first and second fibre cores by cladding material of the optical fibre.
16. (Previously presented) A sensor system characterised by an optical fibre according to claim 2.
17. (Currently amended) A sensor system comprising an optical fibre according to claim 2 comprising
~~a first fibre core, the core being doped and having at least one fibre laser, the at least one laser comprising a pair of reflection gratings embedded in the first fibre core to form a lasing volume and a second undoped fibre core separated from the first fibre core by cladding material of the optical fibre wherein the second fibre core is optically coupled to the lasing volume of each of the at least one fibre laser in the first fibre core such that in use pump light from a pump source can propagate down the second fibre core and be coupled into the at least one fibre laser, a pump source operably connected to the second fibre core of the optical fibre and detection means arranged to detect and analyse light emitted from the optical fibre.~~
18. (Previously presented) An optical fibre as claimed in Claim 2 wherein the optical fibre is tapered along its length
19. (Previously presented) An optical fibre according to claim 2, wherein first and second cores are spaced apart within a cladding structure.